UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/874,420	06/05/2001	Michael Arnold Joffe	US010279	5691

24737 7590 12/30/2003

PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER	
YAM, STEPHEN K	
ART UNIT	PAPER NUMBER
2878	

DATE MAILED: 12/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/874,420	JOFFE, MICHAEL ARNOLD	
	Examiner	Art Unit	
	Stephen Yam	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-11 and 13-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-8,10,11 and 13-16* is/are rejected.

7)☒ Claim(s) *9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 8, 2003 has been entered. Claims 1, 2, 4-11, and 13-16 are still pending.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 4, and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Mizutani US Patent No. 5,633,721.

Regarding Claim 1, Mizutani teaches (see Fig. 1) a positioning system for use in adjusting the position of a workpiece (1), comprising a light source (6) for directing a light beam onto the top surface (1a) of said workpiece, and a detector (17) coupled to said light source for detecting the light beam received by said workpiece, and for processing a deviation direction and a deviation amount (see Col. 7, lines 40-45) based on a positional relationship between an image

of said light beam shifted on the surface of said workpiece and a predetermined reference image (see Col. 7, lines 20-52).

Regarding Claim 2, Mizutani teaches (see Fig. 1) a holding means (2, 3, 4) for releasably holding said workpiece and for vertically adjusting (see Col. 5, lines 4-9 and Col. 7, lines 30-33, 40-46) the position of said workpiece based on said deviation direction and said deviation amount.

Regarding Claim 4, Mizutani teaches (see Fig. 1) said detector located above a normal axis (axis of (1a)) associated with said workpiece.

Regarding Claim 6, Mizutani teaches (see Fig. 1) said detector comprising a photodiode camera (see Col. 7, lines 47-49).

Regarding Claim 7, Mizutani teaches (see Fig. 1) a method for adjusting the vertical position of a workpiece (1), said method comprising the steps of transmitting (6) a light beam onto the top surface (1a) of said workpiece at a predetermined angle relative to a normal axis (AX1) associated with said workpiece, detecting (17) the light beam projected on the top surface of said workpiece, detecting a lateral shift (see Col. 7, lines 25-30) of said detected light beam on the top surface of said workpiece, said shift occurring as a result of a vertical translation of said top surface (see Col. 7, lines 25-30), and converting said detected lateral shift to a corresponding vertical distance using trigonometry (see Col. 7, lines 25-52).

Regarding Claim 8, Mizutani teaches (see Fig. 1) the step of positioning (2, 3, 4) said workpiece based on said converted vertical distance (see Col. 5, lines 4-9 and Col. 7, lines 30-33, 40-46).

4. Claims 1 and 4-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Jalkio et al. US Patent No. 4,872,747.

Regarding Claim 1, Jalkio et al. teach (see Fig. 1) a positioning system for use in adjusting the position of a workpiece (14), comprising a light source (12) for directing a light beam onto the top surface (top of (14)) of said workpiece, and a detector (18) coupled to said light source for detecting the light beam received by said workpiece, and for processing a deviation direction and a deviation amount (see Col. 3, lines 24-26) based on a positional relationship between an image of said light beam shifted on the surface of said workpiece and a predetermined reference image (from top Fig. 1- Calibration).

Regarding Claim 4, Jalkio et al. teach (see Fig. 1) said detector located above a normal (vertical) axis associated with said workpiece.

Regarding Claim 5, Jakio et al. teach said light source comprising a laser diode (see Col. 3, lines 18-19).

Regarding Claim 6, Jalkio et al. teach (see Fig. 1) said detector comprising a photodiode camera (see Col. 5, lines 59-60).

Regarding Claim 7, Jalkio et al. teach (see Fig. 1) a method for a workpiece (14), said method comprising the steps of transmitting (12) a light beam onto the top surface (1a) of said workpiece at a predetermined angle (see Fig. 1) relative to a normal axis (vertical) associated with said workpiece, detecting (18) the light beam projected on the top surface of said workpiece, detecting a lateral shift (see Col. 3, lines 24-26) of said detected light beam on the top surface of said workpiece, said shift occurring as a result of a vertical translation of said top

surface (Δz), and converting said detected lateral shift to a corresponding vertical distance using trigonometry (see Col. 1, lines 15-17).

5. Claims 1, 4, 6, 7, 10, 11, 13, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Hasegawa et al. US Patent No. 5,834,767.

Regarding Claim 1, Hasegawa et al. teach (see Fig. 1) a positioning system for use in adjusting the position of a workpiece (73), comprising a light source (75) for directing a light beam onto the top surface (top of (73)) of said workpiece, and a detector (84) coupled to said light source for detecting the light beam received by said workpiece, and for processing a deviation direction and a deviation amount (see Col. 57-63) based on a positional relationship between an image of said light beam shifted on the surface of said workpiece and a predetermined reference image (original position of pattern, from comparison of displacement- see Col. 1, lines 57-60).

Regarding Claim 4, Hasegawa et al. teach (see Fig. 1) said detector located above a normal axis (Ax) associated with said workpiece.

Regarding Claim 6, Hasegawa et al. teach (see Fig. 1) said detector comprising a photodiode camera (since it captures an image- see Col. 1, lines 57-60).

Regarding Claim 7, Mizutani teaches (see Fig. 1) a method for adjusting the vertical position of a workpiece (73), said method comprising the steps of transmitting (75) a light beam onto the top surface (top of (73)) of said workpiece at a predetermined angle (see Fig. 1) relative to a normal axis (AX) associated with said workpiece, detecting (84) the light beam projected on the top surface of said workpiece, detecting a lateral shift (see Col. 1, lines 57-60) of said

detected light beam on the top surface of said workpiece, said shift occurring as a result of a vertical translation of said top surface (see Col. 1, lines 57-60), and converting said detected lateral shift to a corresponding vertical distance using trigonometry (see Col. 1, lines 60-62- inherently, trigonometry is used since a displacement in one plane directly corresponds to a displacement in a normal axis).

Regarding Claim 8, Mizutani teaches (see Fig. 1) the step of positioning (2, 3, 4) said workpiece based on said converted vertical distance (see Col. 5, lines 4-9 and Col. 7, lines 30-33, 40-46).

Regarding Claim 10, Hasegawa et al. teach (see Fig. 2 and 4) a positioning system for use in adjusting the position of a workpiece (5), comprising a light generating means (8) for projecting a light beam onto the top surface of said workpiece at a predetermined angle (from (13)), a video capturing means (31) for detecting the light beam received on said workpiece and for converting said detected light beam into electrical signals (see Col. 4, lines 7-8- inherently, CCD and PSD devices output electrical signals), and a computer means for processing a deviation direction and a deviation amount (see Col. 3, lines 54-56) based on a positional relationship between an image captured by of said detected light beam shifted on the surface of said workpiece (see Col. 4, lines 4-9) and a predetermined reference image (image on (41)- see Fig. 2).

Regarding Claim 11, Hasegawa et al. teach (see Fig. 4) a means (6, 7) for releasably holding said workpiece in a substantially horizontal orientation (see Fig. 4) and for moving said workpiece horizontally in an X-Y plane to a preselected position (see Col. 5, lines 25-28 and 32-36).

Regarding Claim 13, Hasegawa et al. teach said computer means determining a lateral shift direction and an amount of lateral displacement of said projected light beam with the surface of said workpiece (see Col. 1, lines 57-62 and Col. 4, lines 3-6).

Regarding Claim 15, Hawegawa et al. teach said video capturing means comprising a photodiode camera ("step-and-scan", CCD- see Col. 4, lines 7-8 and Col. 5, lines 25-30).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hawegawa et al. in view of Jalkio et al.

Hawegawa et al. teach the system in Claim 10, according to the appropriate paragraph above. Hawegawa et al. do not teach the light source as a laser diode. Jalkio et al. teach (see Fig. 1) a system for determining the position of a workpiece (14), comprising a light generating means (12) for projecting a light beam onto the top surface (top of (14)) of said workpiece at a predetermined angle (See Fig. 1), a light capturing means (18) for detecting the light beam received on said workpiece and for converting said detected light beam into electrical signals (light detectors inherently output electrical signals), and a means (see Col. 3, lines 20-26) for processing a deviation direction and a deviation amount based on a positional relationship between an image of said detected light beam shifted on the surface of said workpiece and a

predetermined reference image (from top Fig. 1- Calibration), wherein the light generating means comprises a laser diode (see Col. 3, lines 18-19). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a laser diode for the light source means as taught by Jalkio et al. in the system of Hawegawa et al., to provide high-intensity collimated light to increase contrast and detection abilities.

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meyers US Patent No. 5,703,351 in view of Mizutani.

Regarding Claim 16, Meyers teaches (see Fig. 1B and 7) a method for determining the position of an object, comprising the steps of projecting (10) a first light beam (portion of beam (30) that eventually proceeds to (46)) onto the top surface of said workpiece to generate a first image (onto (46)), projecting (10) a second light beam (portion of beam (30) that eventually proceeds to (44)) onto the top surface of said workpiece to generate a second image (onto (44)), using said first and second light beams to provide an indication of distance between said first and second images received by said workpiece (see Col. 2, lines 23-26), and adjusting a lens such that said first and second images coincide (hence, no difference in output signals- see Abstract, lines 10-13 and Col. 6, lines 34-41). Meyers does not teach the object as a workpiece or adjusting the vertical position of the workpiece instead of adjusting a lens. Mizutani teaches (see Fig. 1) a method for adjusting the vertical position of a workpiece (1) comprising projecting (6) a first light beam onto the top surface (1a) of the workpiece, determining the vertical distance to the workpiece (see Col. 7, lines 25-52), and adjusting (2, 3, 4) the vertical position of the workpiece (see Col. 5, lines 4-9 and Col. 7, lines 30-33, 40-46). It would have been obvious to

one of ordinary skill in the art at the time the invention was made to provide a workpiece as an object and adjust the vertical position of the workpiece instead of adjusting a lens as taught by Mizutani in the method of Meyers, to provide focusing features for a microscope system, and integrate all movement in a microscope stage for complete X-Y-Z motion in a single integrated device.

Allowable Subject Matter

9. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

The method as claimed, specifically in combination with monitoring a boundary, generating signals of the position of the boundary, and determining a center point for said boundary, is not disclosed or made obvious by the prior art of record.

Response to Arguments

11. Applicant's arguments with respect to claims 1, 2, 4-11, and 13-16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Yam whose telephone number is (703)306-3441. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (703)308-4852. The fax phone number for the organization where this application or proceeding is assigned is (703)308-7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

SY

THANH X. LUU
PATENT EXAMINER